

Office of Resource Conservation

State of Illinois

Grant Proposal

April 2015

Project Number: T-100-D-1

Project Title: Habitat Enhancement for Nightjars at Stephen A. Forbes State Park

Background: Nightjars and nighthawks (Family Caprimulgidae) are cryptically colored groundnesters typically found in forest habitats (Vilella 1995). Caprimulgids are insectivorous species, mostly foraging at dusk and dawn and during nights with sufficient moonlight (Mills 1985). Because of their cryptic plumage and nocturnal habits, little is known about many aspects of their behavior and ecology, particularly their breeding and nesting behavior (Csada and Brigham 1994, O'Connor 2013, Vilella 1995, Wilkinson 2009). Chuck-will's-widows (*Antrostomus carolinensis*) are found throughout much of the eastern United States, primarily in deciduous, pine, oak-hickory, and mixed-forests (Straight and Cooper 2012). Little is known about the factors important in nest-site selection by Chuck-will's-widows. O'Connor (2013) recommends that additional study is needed to better understand nest-site selection and the breeding behavior of caprimulgids in general and Chuck-will's-widows specifically.

Need: Nightjars (Chuck's-will-widow and whip-poor-wills) are decreasing throughout the Midwest, including in Illinois. The loss of open woodland communities for nesting, foraging, and migration are having significant impacts on these nightjar populations. MOON (Monitoring of Owls and Nightjars in Illinois) routes conducted by the Illinois Natural History Survey have documented this decline of nightjar in Illinois. This population decline has resulted in the listing of Chuck's-will-widow as a state threatened species in Illinois and the whip-poor-will (*Antrostomus vociferus*) as a Illinois Species in Greatest Need of Conservation. However, a MOON route conducted at Stephen A. Forbes State Park indicates that the park appears to be supporting a stable population of both the state threatened Chuck's-will-widow (Nyboer et al. 2006) and whip-poor-wills. On-going open woodland habitat enhancement practices that have been implemented at the park over the last ten years seem to have had a positive impact on nightjar populations. These habitat enhancement practices include understory removal of undesirable sugar maples and hickories and a prescribed burn program. However, due to limited manpower and funding, these management practices have only been implemented on a portion of the woodland communities that exist at Stephen A. Forbes State Park.

Purpose and Objectives: Increase the overall open woodland communities at Stephen A. Forbes State Park through understory removal of undesirable maples and hickories on 600 forested acres and implementing prescribed burning on an additional 800 acres of woodland communities. These additional open woodland acres will provide critical additional habitat for nightjars and other Illinois species in greatest need of conservation that are dependent upon open woodland communities. The continuation and expansion of the existing MOON route at Stephen A. Forbes State Park will document if the habitat enhancement project maintains the existing nightjar population levels and if nightjar populations to expand into the enhanced habitats. If additional funding is obtained, the Illinois Natural History Survey may expand the research component and conduct additional surveys to document nightjar nest site selection, foraging habitats and use of various habitat types related to management practices.

Expected Results and Benefits:

The open woodland habitat enhancement project will increase the overall quality and available acreage of open woodland communities at Stephen A. Forbes State Park. Open woodland communities are rare in Illinois due to clearing for agriculture, lack of fire, degradation by poor timber management practices and the presence of exotics, all of which may be playing a role in the decline of nightjars in the Midwest. Habitat enhancement through the removal of undesirable woody vegetation and reintroduction of prescribed fire will provide better quality nesting, foraging and migratory habitats for the existing nightjar populations at Stephen A. Forbes State Park. In addition, other Illinois species in greatest need of conservation that depend upon open woodlands should also benefit from this project, including: red-headed woodpecker (*Melanerpes erythrocephalus*), northern flicker (*Colaptes auratus*), wood thrush (*Hylocichla mustelina*), yellow-billed cuckoo (*Coccyzus americanus*), American woodcock (*Scolopax minor*), brown thrasher (*Toxostoma rufum*), broad winged hawk (*Buteo platypterus*), red-shouldered hawk (*Buteo lineatus*), Kentucky warbler *Geothlypis formosa*, bobcat (*Lynx rufus*) and gray fox (*Urocyon cinereoargenteus*).

The degraded open woodland communities at Stephen A. Forbes State Park should benefit significantly from implementation of the understory removal and prescribed fire program. The plant and animal communities associated with open woodlands should increase in overall quality and species richness. At a minimum, with the implementation of this project, nightjar populations at Stephen A. Forbes will maintain existing population levels and potentially increase as these existing populations expand into the open woodland habitats impacted by this habitat enhancement project. With continued management of open woodland communities, nightjar populations should increase at Stephen A. Forbes State Park.

Approach:

To improve degraded open woodland communities at Stephen A. Forbes State Park in Marion County, Illinois habitat enhancement through understory removal of undesirable woody vegetation on 600 acres and a prescribed fire program on 800 acres will be implemented through this grant.

1. A contractor will be hired to remove undesirable woody species (sugar maple and hickory) from the understory of degraded open woodland communities on 500 acres of degraded open woodland communities (Figure 02) using Federal Funds. All woody vegetation will be removed by cut stump method; all stumps will be treated by a licensed herbicide applicator following IDNR guidelines for herbicide application.
2. Illinois Department of Natural Resources (IDNR) staff will conduct prescribed burning on 800 acres of open woodland communities during the three year duration of the project (Figure 03) as match. All prescribed burning will follow an approved IDNR prescribed burn plan and will be conducted by trained staff and overseen by a certified prescribed burn manager. All prescribed burning will follow guidelines provided by the IDNR prescribed burn policy.
3. The Illinois Department of Natural Resources will hire a contractor to remove undesirable woody species (sugar maple and hickory) from the understory of degraded open woodland communities on 100 acres of degraded open woodland communities (Figure 02) using State Funds as match. All woody vegetation will be removed by cut stump method; all stumps will be treated by a licensed herbicide applicator following IDNR guidelines for herbicide application.

To monitor both existing nightjar populations at Stephen A. Forbes State Park, the existing MOON routes will be continued to be conducted (Figure 04 and Figure 05). Additional stops will be added to the existing MOON route in an effort to cover additional parts of Stephen A. Forbes State Park and surrounding areas. Data from the MOON routes will provide documentation of the response of nightjars to habitat enhancement at Stephen A. Forbes State Park.

Useful Life: N/A

Geographical Location:

Stephen A. Forbes State Park, Marion County, Illinois
Omega Township T 3 N – R 4 E Sections 03, 04, 05, 08, 09, 10, 15 & 16
Meacham Township T 4 N – R 4 E Sections 32 & 33

Figure 1. – Stephen A. Forbes State Park, Marion County, Illinois

Principle Investigator:

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Program Income: N/A

Budget Narrative:

PROJECT BUDGET			
Project Title: Habitat Enhancement for Nightjars at Stephen A Forbes State Park			
T-100-D-1			
Project Time Frame: Start Date - (11/01/2015); End Date - (06/30/2019)			
Budget Catagories	Federal Funds	Non-Federal Funds	Project Totals
Salaries and Wages	\$0.00	\$12,750.00	\$12,750.00
Fringe Benefits	\$0.00	\$0.00	\$0.00
Travel	\$0.00	\$0.00	\$0.00
Equipment	\$0.00	\$0.00	\$0.00
Materials and Supplies	\$0.00	\$0.00	\$0.00
Contractual Services	\$42,250.00	\$10,000.00	\$52,250.00
Other	\$0.00	\$0.00	\$0.00
Total Direct Costs	\$42,250.00	\$22,750.00	\$65,000.00
Modified Total Direct Cost (MTDC)	\$42,250.00	\$10,639.00	\$52,889.00
Indirect Rate of 20%	\$0.00		\$8,450.00
Indirect Rate of 19.84 %		\$2,111.00	\$2,111.00
Unrecovered Indirect Rate		\$0.00	
Total Project Costs	\$42,250.00	\$25,212.00	\$75,912.00
Percentage of Total Project Cost	66.00%	33.00%	

BUDGET JUSTIFICATION			
Describe below the expenses included in each of the categories above. For the budget category of "Travel", break down the expenses between in-state, out-of-state and international travel. For each budget category justify the need for the expenses listed above by explaining what the cost consists of and how the proposed cost relates to the goals and objectives of the project.			
Salaries and Wages:	The non-federal match is from	IDNR staff conducting/assisting with prescribed burning on 800 acres	
	of degraded open woodland communities at SA Forbes State Park during the duration of the grant		
Fringe Benefits:			
Travel:	n/a		
Equipment:	n/a		
Materials and Supplies:	n/a		
Contractual Services:	Federal funds will be used by IDNR	to contractually hire a contractor(s) to remove invasive woody	
	vegetation from the understory of 500 acres of degraded open woodland communities at SA Forbes State Park.		
	IDNR will use state funds to contractually hire a contractor to remove invasive woody vegetation from the understory		
	of 100 acres of degraded open woodland communities at SA Forbes State Park	as non-federal match	
Other:			

Multipurpose Projects: N/A

Relationship w/ Other Grants: N/A

Timeline:

The following activities will be conducted during the approximate time frames:

1. November 01 -2015 – June 30, 2019

A contractor will remove invasive woody species from the understory on 600 acres of degraded open woodland communities at Stephen A. Forbes State Park.

2. November 01, 2015 - June 30, 2019

Illinois Department of Natural Resources staff will conduct prescribed burning on 800 acres of degraded open woodland communities at Stephen A. Forbes State Park.

3. November 01, 2015 – June 30, 2019

Illinois Department of Natural Resources and Illinois Natural History Survey staff will conduct MOON routes and other surveys to determine and documents changes in nightjar (Chuck's-will-widow and whip-poor-will) populations at Stephen A. Forbes State Park.

4. November 01,2018 – June 30, 2019

Prepare final SWG report for this grant.

General:

(i) **Substantial in Character and Design**

The project statement describes a need consistent with the -State Wildlife Grants (SWG); states a purpose and sets objectives, both of which are based on the need; uses a planned approach, appropriate procedures and research; and is cost effective.

(ii) **Compliance:**

The IDNR will use its CERP (Comprehensive Environmental Review Process) as a tool to aid the Department in meeting NEPA compliance for the project outlined under this grant proposal. It is the Department's policy to require CERP applications for all land disturbing activities unless those activities are covered by CERP exemptions.

All planned activities will also be in compliance with the Endangered Species Act. All determinations and documentation will be in accordance with the current established U.S. Fish and Wildlife Service protocols for section 7.

All planned activities will be in compliance with the National Historic Preservation Act and the Council on Historic Preservation Act. All determinations and documentation will be in accordance with the terms of the Programmatic Agreement, as amended, effective September 23, 2002.

When applicable, those planned activities which involve a floodplain and/or jurisdiction wetlands will be done in accordance with Presidential Executive Orders 11988 and 11990.

When applicable, those planned activities which involve programs and/or site improvements will be done in accordance with Section 504 of the Rehabilitation Act and the Americans with Disabilities Act.

When applicable, those planned activities which involve the use of pesticides, herbicides or other comparable chemicals will be done in accordance with current state and federal regulations to assure the safe and legal application of those chemicals. All chemicals will be applied in accordance with the manufacturers label instructions. All persons applying chemicals will be licensed by the Illinois Department of Agriculture as a chemical operator along with a licensed applicator, in accordance with Illinois state law.

(iii)

Csada, R. D., and R. M. Brigham. 1994. Breeding biology of the Common Poorwill at the northern edge of its distribution. *Journal of Field Ornithology* 65: 186-193.

Mills, A. M. 1985. The influence of moonlight on the behavior of goatsuckers (Caprimulgidae). *Auk* 103: 370-378.

O'Connor, Ryan Sean, "Breeding Biology Of Chuck-Will's-Widows: Incubation, Brooding, And Provisioning Behavior And Characteristics Of Nest Sites" (2013). Online Theses and Dissertations. Paper 115.

MOON Routes: Monitoring of Owls and Nightjars in Illinois – Illinois Natural History Survey website: <http://www.inhs.illinois.edu/research/moon/>

Nyboer, R.W., J.R. Herkert, and J.E. Ebinger, editors. 2006. Endangered and Threatened Species of Illinois: Status and Distribution, Volume 2 - Animals. Illinois Endangered Species Protection Board, Springfield, Illinois. 181 pp.

Straight, C. A., and R. J. Cooper. 2012. Chuck-will's-widow (*Antrostomus carolinensis*). In: *The Birds of North America Online* (A. Poole, ed.). Cornell Lab of Ornithology, Ithaca, NY; Retrieved from the Birds of North America Online: <http://bna.birds.cornell.edu/bna/species/499>.

Vilella, F. J. 1995. Reproductive ecology and behaviour of the Puerto Rican Nightjar *Caprimulgus noctitherus*. *Bird Conservation International* 3:349-366.

Wilkinson, F. A. 2009. Observations on the breeding biology of the Silky-tailed Nightjar (*Caprimulgus sericocaudatus mengeli*). *Wilson Journal of Ornithology* 121: 498-505.

Figure 1. Aerial Photo of Stephen A. Forbes State Park, Marion County, Illinois

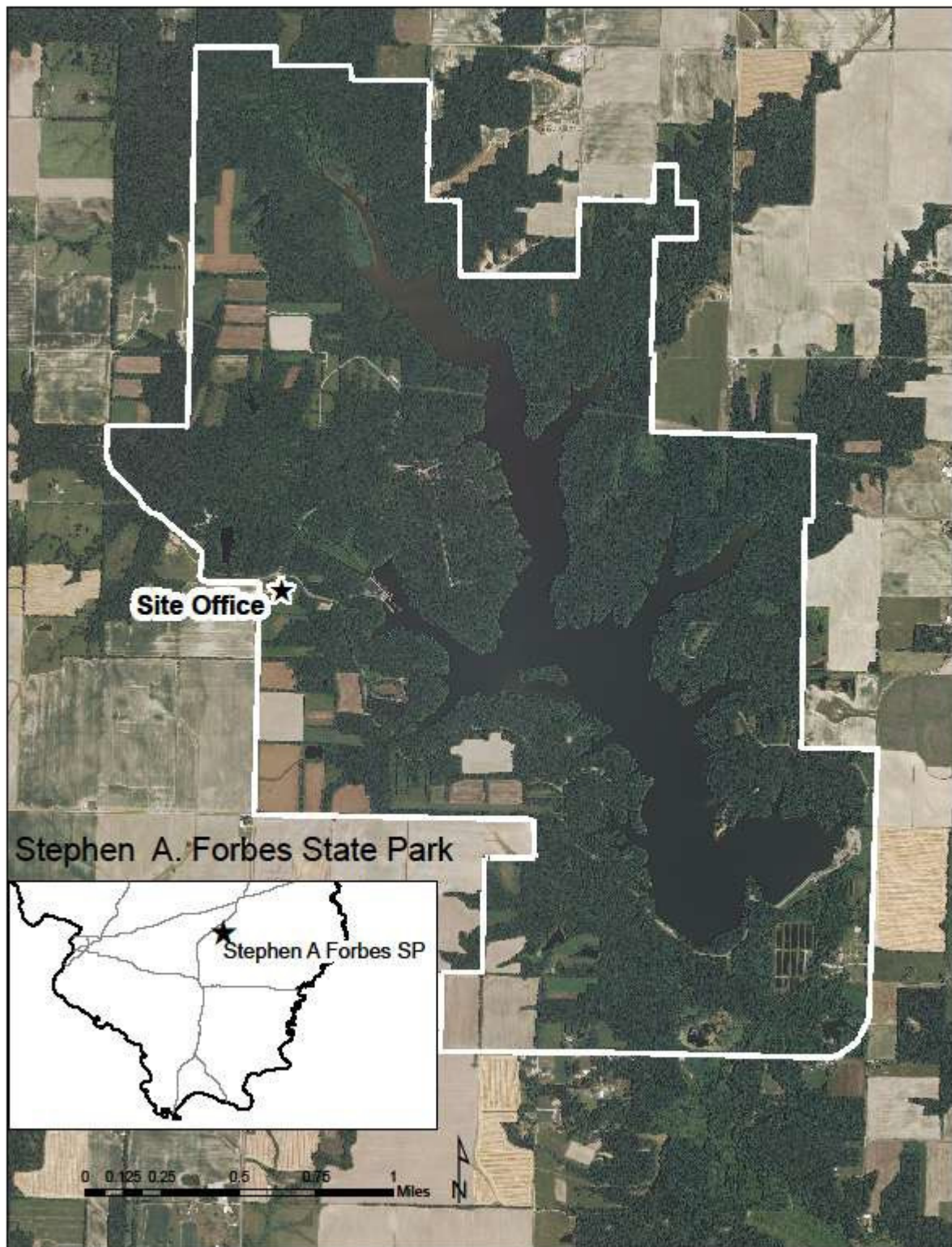


Figure 2. Open Woodland Management Units (invasive woody control) at Stephen A. Forbes State Park, Marion County, Illinois.

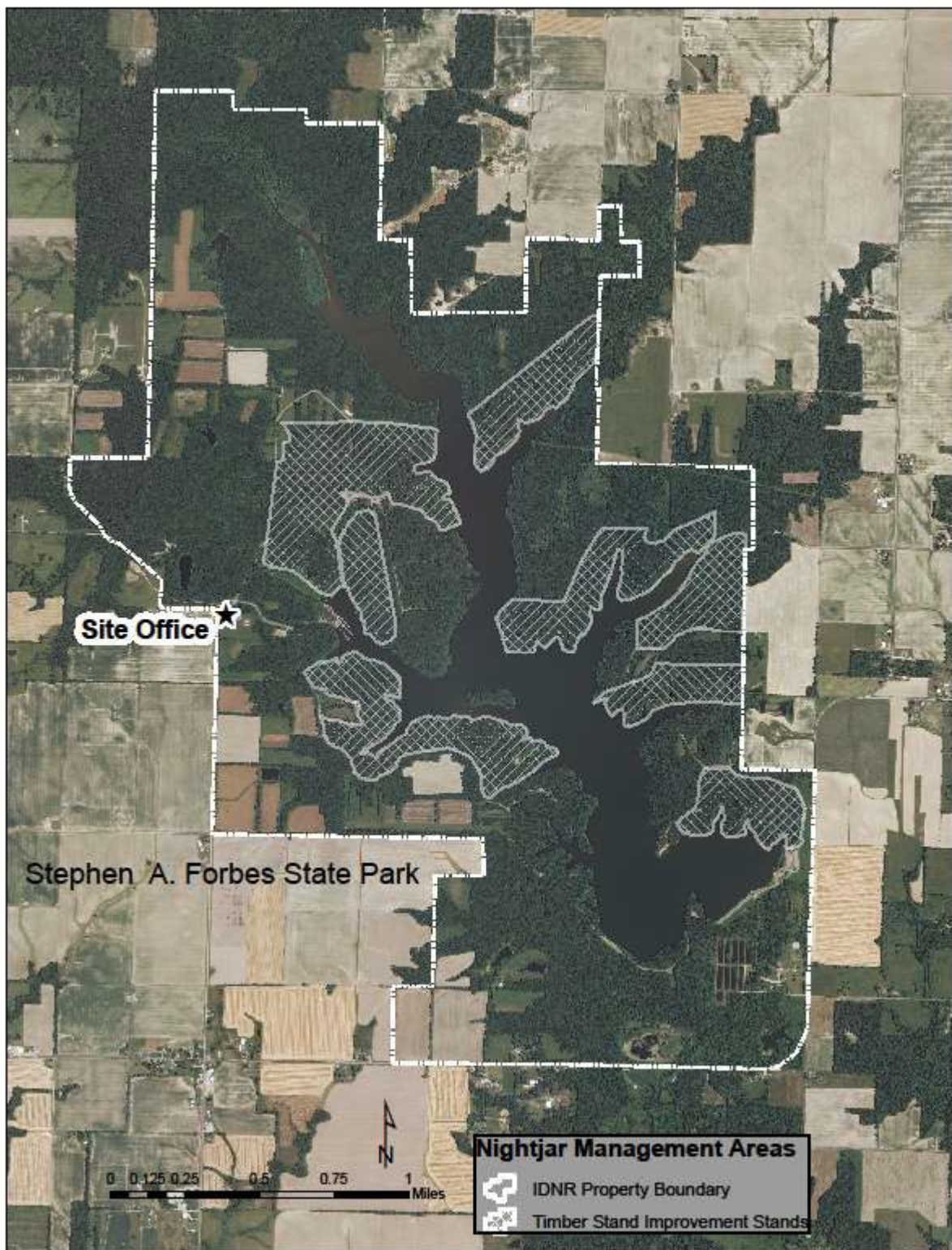


Figure 3. Open Woodland Management Units (prescribed fire) at Stephen A. Forbes State Park, Marion County, Illinois.

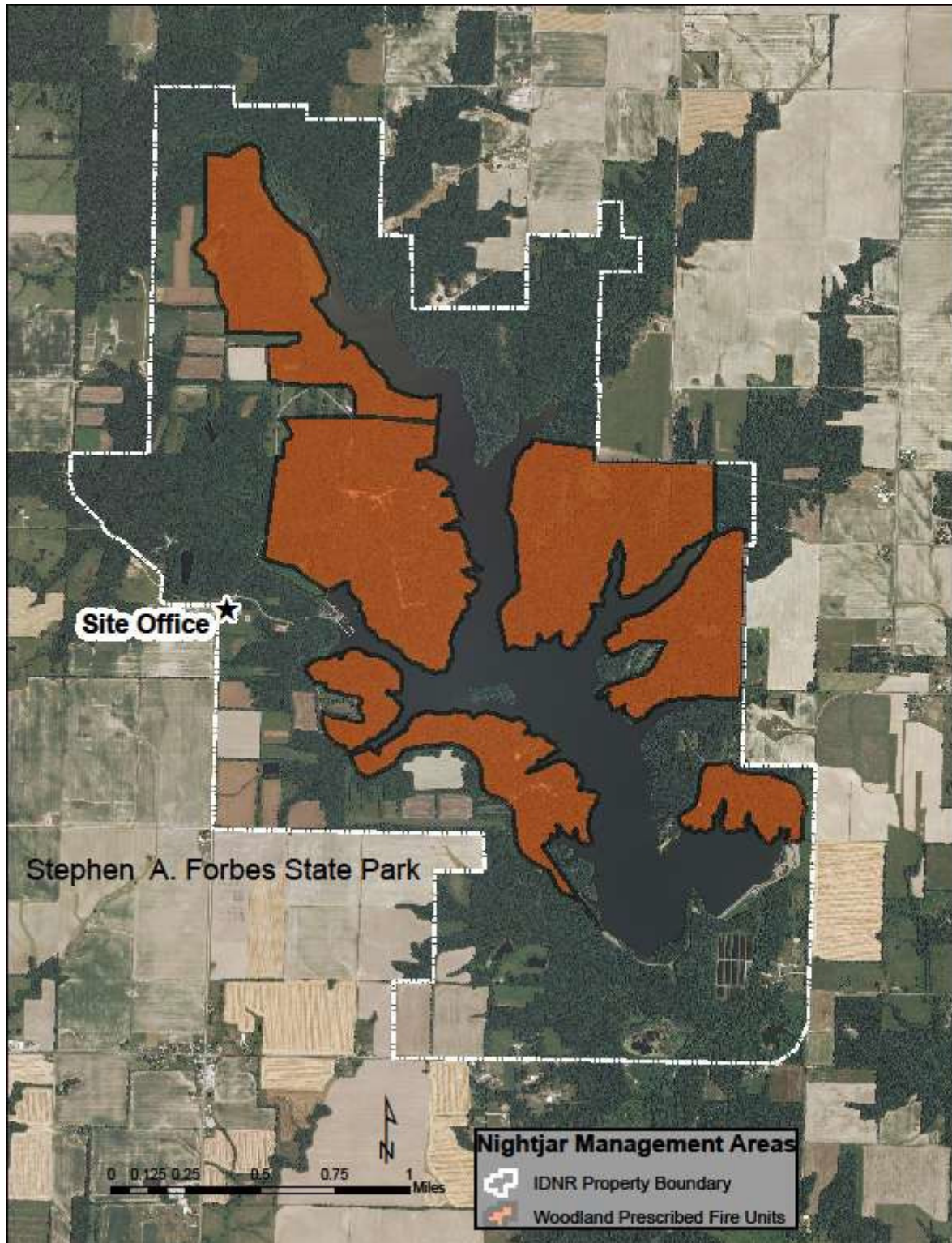


Figure4. Locations of stops on eldsting MOON route for nightjars at Stephen A. Forbes State Park, Marion County, Illinois.



Monitoring of Owls and Nightjars (MOON) in Illinois

Why Monitor

Bird monitoring has played a crucial role in estimating population trends, distribution, and abundance for many species, which in turn has been integrated into management and conservation decisions regarding many high profile species. These changes in management, and efforts to conserve, have restored and stabilized many of the once extirpated or nearly extirpated species. However, while current monitoring programs, such as Breeding Bird Survey (BBS), Spring Bird Count (SBC), and Christmas Bird Count (CBC) have done an excellent job of estimating population trends for most species they do not have the capability to estimate population trends for nocturnal species. Because of this void, many organizations throughout Canada and the United States have begun, or are beginning to implement monitoring programs for various groups of nocturnal species. The initiation of efficient and statistically powerful monitoring programs for nocturnal species will allow us to detect small population changes over a shorter period of time.

Owl and Nightjar Status in Illinois

In Illinois we have four confirmed breeding species of owl; Barn Owl, Barred Owl, Great Horned Owl, and Short-eared Owl and three confirmed breeding species of nightjar; Chuck-will's-widow, Common Nighthawk, and Whip-poor-will. Within these two groups the Barn Owl and the Short-eared Owl are currently listed as endangered. The Eastern Screech-Owl is found in low numbers on BBS routes (BBS data), the Great Horned Owl is widespread and the Barred Owl, which historically was listed as rare, is now found throughout the state. As far as nightjars go, in 1934 Ford et al. were quoted as saying this of the Whip-poor-will in *Birds of the Chicago Region* – “A fairly common summer resident. Although not so numerous as formerly, they still occur throughout the area”. Unfortunately, the same statement could not be said today. Common Nighthawks have a pretty even distribution throughout the state, and the Chuck-will's-widow is found in the lower southern portion of the state. Loss of habitat, cattle grazing, and available food are all factors that could be contributing to the decline of these species.

Because much of Illinois has become agriculturally dominated habitat selection is limited for owls and nightjars. Additionally, changes in agricultural practices have caused a decrease in available food sources for owls and nightjars. Needless to say it became apparent Illinois was in need of a monitoring program that would eventually allow us to learn more about these two groups of species and what courses of action we need to take to see that they are conserved.

MOON

In the spring of 2008 Monitoring of Owls and Nightjars, MOON, in Illinois was initiated. MOON is a volunteer based program that occurs throughout the state of Illinois. Volunteers monitor routes located along suitable habitat for owls and nightjars from April to June. Routes are 9 miles long with 10 stops per route. The unique thing about MOON is that volunteers are encouraged to monitor for all species they hear during the listening period. This additional data can give us additional insight into the life histories of other species. We are always looking to recruit more volunteers, so if you would like to volunteer please click on the following link to learn more about volunteering:

Contact Information:

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